

NOVEMBER/DECEMBER 2025

FAEL32/CAEL34 — BASIC PHYSICS — I
(Allied)

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define moment of inertia.
2. State Newton's law of gravitation.
3. Define Hooke's law.
4. What is a torsional oscillation?
5. Define terminal velocity.
6. What is surface tension?
7. State first law of thermodynamics.
8. Name one good conductor and one bad conductor of heat.
9. Define decibel.
10. What is ultrasonic wave?



SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) Derive the expression for kinetic energy of a rolling object.

Or

- (b) Describe the determination of G by Boy's method.

12. (a) Explain the energy stored in stretched wire.

Or

- (b) Derive bending of a beam with a neat diagram.

13. (a) Explain Oswald's viscometer method for comparison of viscosities.

Or

- (b) Describe the formation of drops and bubbles.

14. (a) Briefly explain the coefficient of thermal conductivity.

Or

- (b) State and explain second law of thermodynamics.

15. (a) Explain Melde's experiment for frequency of vibrator.

Or

- (b) Describe the production of ultrasonic waves.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Derive the expression for escape velocity of a body from Earth.

17. Describe the static torsion method to determine rigidity modulus of a material.

18. Derive the relation for excess of pressure inside a soap bubble and discuss the cases.

19. Explain Lee's disc method for determining thermal conductivity of a bad conductor.

20. Obtain the expression for reverberation time using Sabine's formula.

